

Having thus described the invention, what is claimed is:

Sub A<sup>1</sup> 1. A biological safety cabinet, comprising:  
a frame defining a protected work area, said work area being enclosed on all  
but a front face;  
a sash coupled to said frame, said sash at least partially enclosing the open  
front face of said work area;  
a blower coupled to said frame generally above said work area, said blower  
being adapted to circulate air through said work area to make said  
work area a negative pressure area so that harmful materials are  
confined within said work area; and  
a sash grill coupled to said frame generally below said sash, said sash grill  
having a curved top surface,  
wherein the curved sash grill promotes smooth air flow into said work area,  
thereby better containing any harmful materials.

2. The biological safety cabinet of claim 1, wherein said sash grill has a plurality  
of first perforations therein, said first perforations allowing air to flow through said sash foil.

Sub A<sup>2</sup> 3. The biological safety cabinet of claim 1, wherein said work area includes a  
pair of spaced interior side walls, the safety cabinet further comprising a pair of spaced side trim  
panels, one of said trim panels being located adjacent each of said side walls of said work area, said  
side trim panels forming an obtuse angle with respect to said side walls thereby promoting smooth  
flow of room air into said work area.

4. The biological safety cabinet of claim 3, wherein said sash grill has a plurality of second perforations therein, said second perforations being larger than said first perforations and being located generally adjacent each of said side walls.

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5 The biological safety cabinet of claim 2, wherein said sash has a handle coupled thereto along the lower-most surface thereof, said handle having a top surface adjacent said sash, a rear surface facing said work area and a front surface extending between the top and rear surfaces, said front surface of said handle being oriented at an acute angle relative to said rear surface to allow air entering said work area along said front surface to more smoothly interface with the air traveling downwardly along said rear surface.

10 6. The biological safety cabinet of claim 2, wherein said sash has a handle coupled thereto along the lower-most surface thereof, said handle having a top surface adjacent said sash, a rear surface facing said work area and a front angled surface extending between the top and rear surfaces, said angled front surface allowing air entering said work area along said front surface to more smoothly interface with the air traveling downwardly along said rear surface.

15 7. A biological safety cabinet having an improved air flow, comprising:  
a frame defining a protected work area, said work area being enclosed on all  
but a front face, said work area including a pair of spaced interior side  
walls;  
a pair of spaced side trim panels, one of said trim panels being located  
adjacent each of said side walls of said work area, each of said trim  
panels forming an obtuse angle with respect to the adjacent side wall;

a sash coupled to said frame, said sash at least partially enclosing the front face of said work area; and

a blower coupled to said frame generally above said work area, said blower being adapted to circulate air through said work area to make said work area a negative pressure area so that harmful materials are confined,

wherein the orientation of the side panels with respect to the side walls promotes the smooth flow of room air into said work area and promotes containment of the air within the work area along said side walls.

8. The biological safety cabinet of claim 7, wherein said side walls have a height, and wherein said trim panels extend along the entire height of said side walls.

9. The biological safety cabinet of claim 8, wherein said sash has a handle coupled thereto along the lower-most surface thereof, said handle having a top surface adjacent said sash, a rear surface facing said work area and a front surface extending between the top and rear surfaces, said front surface of said handle being oriented at an acute angle relative to said rear surface to allow air entering said work area along said front surface to smoothly interface with the air traveling downwardly along said rear surface.

10. The biological safety cabinet of claim 9, further comprising a sash grill coupled to said frame generally below said sash, said sash grill having a curved top surface, wherein the curved sash grill promotes smooth air flow into said work area and containment of harmful materials.

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11. A biological safety cabinet, comprising:

a frame defining a protected work area, said work area being enclosed on all  
but a front face;

a sash coupled to said frame, said sash at least partially enclosing the front  
face of said work area;

5 a blower coupled to said frame generally above said work area, said blower  
being adapted to circulate air through said work area to make said  
work area a negative pressure area so that harmful materials are  
confined therewithin; and

a pressure gauge located within said work area, said pressure gauge adapted  
to measure a positive pressure environment created by said blower  
above said work area,

wherein any leaks in said pressure gauge will be contained within said work  
area.

6 12. The biological safety cabinet of claim 11, further comprising a supply filter

forming a ceiling for said work area; said blower directing air through said supply filter, said supply  
filter being adapted to remove contaminants from the air flowing therethrough, and a plenum box  
located between said supply filter and said blower, said pressure gauge being adapted to measure the  
pressure within said plenum box.

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20 13. The biological safety cabinet of claim 12, wherein said work area includes a

rear baffle plate defining the rear wall of said work area and wherein said pressure gauge is mounted  
in said baffle plate.

*8* 14. The biological safety cabinet of claim 13, wherein said sash is transparent, and

wherein said pressure gauge is mounted at a location viewable through said sash.

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15. A biological safety cabinet, comprising:

a frame defining a protected work area enclosed on all but a front face, said work area including a rear baffle, opposing side walls, a ceiling and a bottom surface, said baffle being spaced above said bottom surface;

a sash coupled to said frame, said sash at least partially enclosing the front face of said work area;

a blower coupled to said frame above said ceiling of said work area, said blower being adapted to circulate air through said work area to make said work area a negative pressure area so that harmful materials are confined within said work area;

a rear panel located behind said baffle of said work area, said rear panel spaced from said baffle to create a void through which air can flow;

and

a perforated towel catch extending between a lower-most edge of said baffle and said rear panel, said towel catch being closer to said bottom surface at said rear panel than at said baffle,

wherein said towel catch may be visually inspected for blockage through said open front face of the safety cabinet.

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16. The biological safety cabinet of claim 15, further comprising a removable work surface spaced above said bottom surface, said work surface concealing said towel catch from view when in place within said work area.

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17. The biological safety cabinet of claim 16, wherein said towel catch is oriented 5 at an acute angle with respect to said bottom surface.

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18. The biological safety cabinet of claim 17, wherein said towel catch is removably coupled to said baffle.

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19. The biological safety cabinet of claim 18, further comprising a pressure gauge coupled to said baffle, said pressure gauge adapted to measure a positive pressure environment created by said blower above said work area, wherein any leaks in said pressure gauge will be contained within said work area.

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20. The biological safety cabinet of claim 16, further comprising a sash grill coupled to said frame generally below said sash, said sash grill having a curved top surface, wherein the curved sash grill promotes smooth air flow into said work area and containment of harmful materials.

Sub A7  
21. A biological safety cabinet, comprising:  
a frame defining a protected work area, said work area being enclosed on all  
but a front face;  
a sash coupled to said frame, said sash at least partially enclosing the front  
face of said work area, said sash being moveable to allow access to  
said work area;

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a blower coupled to said frame above said work area, said blower being adapted to circulate air through said work area to make said work area a negative pressure area so that harmful materials are confined; and a sash pocket coupled to the exterior of said frame generally above said work area and above said sash, said sash pocket being enclosed on all but a lower end thereof, said sash extending into said lower end of said sash pocket,  
5 wherein said sash pocket provides a protective housing for said sash when said sash is moved upwardly away from said work area.

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22. The biological safety cabinet of claim 21, further comprising a front panel coupled to said frame above said work area and in front of said blower, said sash pocket being coupled to said front panel, and wherein said sash is spaced outwardly away from said front panel.

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23. The biological safety cabinet of claim 22, wherein said front panel includes a plurality of holes extending therethrough above said work area, said holes providing fluid communication between the exterior of the safety cabinet and the interior thereof.

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24. The biological safety cabinet of claim 23, wherein said sash is spaced away from said work area, allowing fluid communication between said work area and the exterior of the safety cabinet, the cabinet further comprising a deflector plate coupled to said frame at the upper end of said work area, said deflector plate extending towards said sash and being spaced away therefrom, 20 said deflector plate operating to maintain a uniform negative pressure in the area of said holes thereby insuring a uniform flow of air into said holes.

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25. The biological safety cabinet of claim 22, further comprising a front cover coupled to said frame, said cover extending over said sash pocket and said front panel to remove said sash pocket and said front panel from view.

26. A biological safety cabinet, comprising:

a frame defining a protected work area enclosed on all but a front face, said work area having a back wall, opposing side walls, a ceiling and a bottom surface;

a blower coupled to said frame above said ceiling of said work area, said blower being adapted to circulate air through said work area to make said work area a negative pressure area so that harmful materials are confined;

a supply filter forming said ceiling of said work area,

said blower directing air through said supply filter, said supply filter being adapted to remove contaminants from the air flowing there through;

a plenum box located between said supply filter and said blower; and

a distribution baffle located within said plenum box and extending generally across said plenum box, said distribution baffle being mounted with a first end located adjacent an output region of said blower and being angled upwardly as said baffle extends away from said blower,

wherein said distribution baffle operates to evenly distribute the air flowing from said blower across said supply filter.

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27. The biological safety cabinet of claim 26, further comprising a pair of curved deflector plates mounted within said plenum box, one of said deflector plates being mounted on each side of said box and oriented to direct air flowing within said box downwardly.

28. The biological safety cabinet of claim 26, further comprising an exhaust filter 18  
coupled to said frame above said plenum box, said exhaust filter being in fluid communication with the exterior of the cabinet and with the plenum box, said exhaust filter being adapted to remove contaminants from the air passing there through prior to being exhausted.

29. The biological safety cabinet of claim 28, further comprising an exhaust filter frame 21  
coupled to said frame and adapted to hold said exhaust filter, said exhaust filter frame having a sealing mechanism coupled thereto and coupled to said plenum box, said sealing mechanism including a threaded member mounted between said filter frame and said plenum box, said member being adapted to turn to move said frame upward and place an upward force on said exhaust filter while placing a downward force on said plenum box and said supply filter.

Sub A9  
30. An exhaust control cap for a biological safety cabinet having an exhaust port, said control cap comprising:  
an enclosure for said exhaust port, said enclosure having sides projecting above the top of said cabinet;  
at least one side panel presenting a plurality of apertures therein; and  
a top panel extending over said sides and covering the top of said enclosure,  
wherein air exhausted from said cabinet is directed outwardly through said apertures.

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31. The exhaust control cap of claim 30, wherein said enclosure is generally rectangular and has four of said side panels, each having apertures therein.

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32. The exhaust control cap of claim 31, wherein the apertures within the side panels are round and are varied in diameter.

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33. The exhaust control cap of claim 32, further comprising a plurality of plugs shaped to extend over a selected aperture, wherein said plugs may be placed over selected apertures to control the flow of air through the control cap.

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34. An exhaust control cap for a biological safety cabinet having an exhaust port and an associated exhaust control system, said control cap comprising:

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an enclosure for said exhaust port, said enclosure having sides projecting above the top of said cabinet, said enclosure being coupled with said exhaust control system;

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an apertured plate coupled with said enclosure and intersecting the flow of air, wherein said apertured plate controls the flow of air exhausted from the cabinet and into said exhaust control system.

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35. The exhaust control cap of claim 34, wherein the apertures within said apertured plate are round and are varied in diameter.

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36. The exhaust control cap of claim 35, further comprising a plurality of plugs shaped to extend over a selected aperture within said apertured plate, wherein said plugs may be placed over selected apertures to control the flow of air through the control cap.